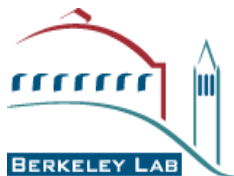




THE GLENN T. SEABORG CENTER
SCIENCE AND EDUCATION FOR HEAVY ELEMENTS AND THE ENVIRONMENT



SPECIAL SEMINAR

Judah J. Frieese

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*“Kinetic Study of the Complexation Reactions of Np(V) and U(VI)
with Oxydiacetic and Dipicolinic Acids”*

Wednesday, January 16, 2002
10AM-11AM
Bldg. 70-Room 191

Host: Dr. Linfeng Rao & Professor Heino Nitsche

Abstract

The rates and mechanisms of complexation reactions between neptunyl(V) or uranyl(VI) and either oxydiacetic (ODA) or dipicolinic (DPA) acids at pH 1.0 and 3.0 in 1.0 M NaClO₄ solutions have been investigated by stopped-flow spectrophotometry. ODA and DPA are multi-dentate carboxylic acids that can accommodate the structural requirements of the linear dioxo actinide cations. As was reported previously in a study of diphosphonate complexes of these metal ions, the rate of formation of the respective 1:1 complexes with ODA is 40 times faster for Np(V) than U(VI), despite a stronger thermodynamic driving force for the latter. However, the complexation rate between DPA and U(VI) is 3 times faster than DPA with Np(V). Mechanistic reasons for these observations will be discussed.